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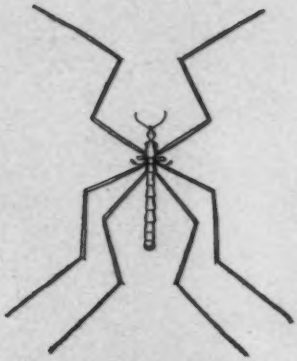

Limnophila aspidoptera Coquillett.

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ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

VOL. XVII. OCTOBER, 1906. No. 8.

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Baron Osten Sacken.

BY J. M. ALDRICH.

(Plate XI)

Karl Robert Romanovich, Baron von der Osten Sacken, commonly known among entomologists as C. R. Osten Sacken, was born in St. Petersburg, August 21, 1828, and died at his home in Heidelberg, Germany, on May 20, 1906.

In 1849 young Osten Sacken entered the service of the Russian Imperial Foreign Office. After some years of apprenticeship in diplomacy, he was in 1856 appointed Secretary of Legation in Washington. In 1862 he was made Consul General for Russia in New York City, and held the position until 1871, when he retired from the diplomatic service. After several journeys to Europe and back, he again settled in the United States, this time as a private citizen, and remained until 1877; in this year he returned to Europe, making his home in Heidelberg the remainder of his life.

From 1856 to 1877, it will be seen, Osten Sacken was almost continuously a resident of the United States. Before this he had begun to work on Diptera, especially Tipulidæ. Imme-

We have received two interesting accounts of the life of Baron Osten Sacken, who may almost be called an American entomologist. These are by two eminent dipterists, and, not caring to discriminate, we decided to publish both.—EDS.

diately on getting settled in this country he began to organize things for extensive dipterological research. He published (in 1859) a catalogue of the described North American Diptera; he collected a large amount of material in the order; he made the acquaintance of most of the collectors in various parts of the country, and had them send him their Diptera; most of his accumulations he sent to Loew in Guben, Prussia, for description, reserving only a few families, principally the Tipulidæ and Tabanidæ, for himself; he also established relations with the Smithsonian Institution which resulted in the publication of a large part of the descriptive matter prepared by Loew and himself in the four volumes called by the general title of "Monographs of North American Diptera"; in short, it may be said that for some twenty-one years nearly all the work done on the order was directly due to the tremendous energy of Osten Sacken. Toward the close of the period, after visiting the principal type collections of Diptera in Europe, he published a second catalogue of North American Diptera, this time critical in character and exhibiting the actual status of the order in a manner which for clearness, completeness, and absolute mastery of the subject must forever remain an unapproachable model for later workers in the order. Osten Sacken had practically created himself all the main subject matter of the catalogue; hence the impossibility of any later entomologist ever occupying a similar position with regard to it.

In addition to the Smithsonian monographs and his two catalogues, Osten Sacken's Prodrome to a Monograph of North American Tabanidæ, published by the Boston Society of Natural History, and Loew's Centuries of North American Diptera (one thousand new species, published in Germany), embody the principal results of his labors.

As a fitting climax to his achievements, Osten Sacken successfully conducted a rather difficult and delicate negotiation, by which Loew was reimbursed for his labors on the North American material, and surrendered it all to the Museum of Comparative Zoology at Harvard, at that time much the best depository in the United States for such material. Osten

Sacken donated all his own material to the same institution, and the Loew-Osten Sacken type collection of Diptera was thus established; it still remains in good condition, and we may expect will continue to be useful for many years to come.

After returning to Europe, Osten Sacken felt that his labors in descriptive entomology were practically at an end. He continued to publish papers on the larger phases of classification, on insect habits, historical researches on entomology, etc., up to a few years before his death. In 1886–87 he published 216 pages of Vol. I. of the Diptera in the Biologia Centrali-Americana. In 1903 and 1904 he published his "Record of My Life Work in Entomology" (parts I and II printed in Cambridge, Mass.; part III in Heidelberg), which gives not only a review of his own activity, but includes critical estimates of several contemporary entomologists, and much historical matter on dipterology in general.

Osten Sacken's entomological work was almost completed twenty-eight years ago, hence he seems to belong to a generation that has long passed away. Only one living dipterist of this country, so far as I know, had a personal acquaintance with him—I allude to S. W. Williston, who met him on his last trip to this country.

Osten Sacken wrote in Russian, German, French, Italian, English, and on occasion in Latin; he preferred English, in which he had a literary style distinguished for clearness, force and accuracy. The striking qualities of his character were energy, farsightedness, persistence, keen discrimination, and conscientiousness. No pecuniary consideration ever lessened the completeness of his devotion to the Diptera. He always sought to be impartial, but the bent of his mind was such that he could never appreciate the argument of a man who disagreed with him. Such people seemed to him either mildly insane, or else animated with a personal animosity towards himself. In a letter to the writer, he says in regard to Loew, "I am conscious of having been perfectly fair towards him in my Record. I never doubted for an instant that he was a perfectly honest and veracious man. His idiosyncrasies I incline to ascribe to a congenital defect of the brain which

disturbed its normal function and finally culminated in the brain disease to which he succumbed. Every one of us, very probably, is afflicted with some malformation of this kind which more or less impairs his mental vision." May we be as charitable with Osten Sacken in regard to the two or three animosities which he especially cherished.

As a correspondent, he was delightful. During his American residence he accumulated large numbers of letters from entomologists in various parts of the country, which it seems from his Record he faithfully preserved till his death. This material would be of great value if ultimately acquired by some American institution; the history of American entomology during the '50's, '60's and '70's is largely embalmed therein.

Two years ago he wrote, "As the Grandfather of American Dipterology, I am very much interested in the progress of my descendants."

On another occasion, "At my age a man does well, when he is able to do so, to withdraw from his usual occupation or profession, and to leave the field for a younger generation. For about fifty years I have worked hard in my science and have reason to be content with the result. My Record I hope to have published bye and bye, and shall allow myself from time to time to publish "obiter dicta" on dipterology, like the short articles which have appeared in the Ent. M. M., London, recently. But, with these exceptions, I give up entomology, and shall not take any part in discussions. In many points my opinions are peculiar. I have explained them distinctly enough in my writings, and posterity will pronounce upon them. For this reason I do not enter into any further discussion about * * *, the result of which is, for me, of sovereign indifference."

And yet again, "My health is excellent, but my brain is easily tired and my working power has much diminished. I am in the position of a traveler at a railway station, waiting for a train to depart with. This departure I expect without the slightest apprehension."

He was a man, take him for all in all,
I shall not look upon his like again.

Charles Robert v. d. Osten Sacken.

By C. W. Johnson.

Baron Osten Sacken was born in St. Petersburg, Russia, August 21, 1828, and died at Heidelberg, Germany, May 20, 1906. Educated in St. Petersburg, he entered into the service of the Imperial Office in 1849. In 1856 he was appointed Secretary of Legation in Washington, and in 1862 Consul General of Russia in New York. Resigning in 1871, he returned to Europe, and in the autumn of 1873 revisited the United States, remaining until 1877, having been a resident of this country for twenty-one years.

At the early age of eleven he began to take an interest in entomology, his first paper appearing in 1854, "Proposal for a new classification of the Tipulidæ brevipalpi," based upon a detailed study of their male genital organs." These ideas were later incorporated in his paper on "New genera and species of North American Tipulidæ," etc., in 1860, and in his "Monograph on the North American Tipulidæ," in 1869. Additional notes on this family appeared in 1886-87 under the title "Studies on Tipulidæ." In 1858 Osten Sacken published the first catalogue of North American Diptera. This work was followed by that laborious and thankless task, the translating and editing of Loew's manuscript of his three monographs; the first appearing in 1862, the second in 1864, and the third, after an unaccountable delay on Loew's part, in 1872. Before the publication of his own monograph on the tipulidæ (part iv) the original manuscript was destroyed by a fire which occurred at Smithsonian Institution, January 24, 1865, and had to be rewritten, the volume not appearing until January, 1869. In recently referring to this matter, which is not mentioned in the monograph, he says: "The loss did not, in the end, turn out to be a loss to science. During a journey to Europe which I undertook soon after it had happened, I gained a great deal of information in the museums I visited that proved a benefit to the work when I reproduced it." Following the work on the monographs, his principal publications were: "Prodrome of a Monograph of the North American Tabanidæ," 1875;

"Western Diptera," 1877, and "Catalogue of North American Diptera," 1878.

It is indeed fortunate that such an able, generous, self-sacrificing man, having always the interest of American Dipterology at heart, should have taken up the study of this neglected order. In his co-operation with Loew he had an understanding that all species described by him should eventually be returned to the United States. This scheme, he says, "enabled me to receive without stint the numerous contributions in collections and specimens which were most generously put at my disposal by different collectors during my long residence in the United States." In 1877, owing to Loew's rapidly declining health, Osten Sacken attended personally to the transfer of the collection to Cambridge. This collection contained about 1300 species described by Loew, 330 identified by him, and about 1200 unidentified species; combined with Osten Sacken's collection, which comprises his types of Tipulidæ, the entire collection of Tabanidæ, Western Diptera, etc., makes a total of about 1800 determined species.

Since 1877 Baron Osten Sacken made his home in Heidelberg and continued his studies of the Diptera, publishing numerous papers, including "Enumeration of the Diptera of the Malay Archipelago," etc., 1881; "An Essay of Comparative Chætotaxy," etc., 1881, revised in 1884; "Diptera from the Philippine Islands," etc., 1882; "The Diptera Orthorrhapha" in "Biologia Centrali-Americana," 1886; "Studies on Tipulidæ," pt. 1, 1886, pt. 2, 1887; On the Characters of the Three Divisions of Diptera: Nemocera vera, Nemocera anomala and Eremochæta, 1892; On the so-called "Bugonia" of the Ancients, 1893, revised in 1894, with additional notes in 1895; "Record of my Life-work in Entomology," pts. 1, 2, 1903, pt. 3, 1904. His entomological publications in all number 179, and he described over 360 species of North American Diptera, and about 100 from the Malay Archipelago, Philippines, etc.

Baron Osten Sacken possessed what is so frequently wanting in scientific men, a thorough mastery of details, undoubtedly an inborn characteristic, which stood by him to the last and enabled

him to produce that wonderfully concise book, "Record of my Life-work in Entomology," a volume which so fittingly rounds out the life-work of this remarkable man. This fascinating book tells, among other things, the many differences existing among the contemporaneous dipterologists—a personal bibliography, as it were, in which the one at fault is always severely criticised. On the other hand, meritorious works and deeds are extolled in terms of true and lasting friendship. His manner of criticism is perhaps best shown in the following paragraph: "In regard to Loew I state here once for all that, while condemning his injustice in the strongest terms, I do not mean to impugn his personal character as a man of truth and honor. Loew, without any question, was a very superior man, *far superior to me in natural ability, as well as learning.* His colossal labors stand for him; what I have done has been to place his work in a better light and to give it a more distinct definition, which was due to history."

Usually he wrote his name C. R. Osten Sacken. In some of the library catalogues in which they have endeavored to give full names, it is Karl Robert Romanovich baron von Osten Sacken. I have adopted the name as it appears in his last publication, printed below his portrait accompanying part 3 of his life-work in entomology.

A new Halictus from Nebraska.

By J. C. Crawford.

Halictus swenki n. sp.—♀.

Form rather slender, head and thorax black, segments 1-3 of abdomen red, segment 1 with a blotch of black at base, segments 4 and 5 black; apical margins of segments lighter, of 4 almost hyaline.

Facial quadrangle slightly longer than broad, hardly narrowed below, supraclypeal area and base of clypeus finely lineolate and finely sparsely punctured, clypeus apically shiny and with sparse larger punctures; face above antennæ shiny, somewhat roughened and with fine shallow indistinct punctures; the whole face almost concealed by white appresed pubescence; flagellum beneath, except 2 or 3 basal segments, red; mesothorax with rather abundant whitish pubescence, finely lineolate,

slightly shiny, with very fine rather close punctures; median groove well impressed, parapsidal grooves not very plain; truncation of metathorax not surrounded by a salient rim, its surface reticulately lineolate and with a few oblique punctures and from center of base a few short radiating striæ; base of metathorax finely reticulately lineolate, dull, with a few irregularly longitudinal striæ reaching about half way to apex except occasionally two or three medial ones which reach almost to apex; mesopleuræ roughened, vertically striate, with oblique punctures, more apparent anteriorly; metapleuræ finely lineolate, slightly vertically striate, with a few scattered punctures more numerous at the upper posteiror angles; wings hyaline, nervures and stigma light honey-color, third submarginal about one-third longer than second, narrowed about one-third to marginal; tegulæ largely testaceous; legs black, anterior and middle knees, a stripe on front of anterior tibiæ and apical joints of tarsi reddish; hind inner spur with about four long teeth; abdomen transversely lineolate, closely and minutely punctured, segment 1 almost impunctate; bases of segments 2 and 3 with indistinct lateral hair patches; segments 4 and 5 covered with thin whitish pubescence; venter with segments 1-3 red, rest black.

Length about 7½-8 mm.

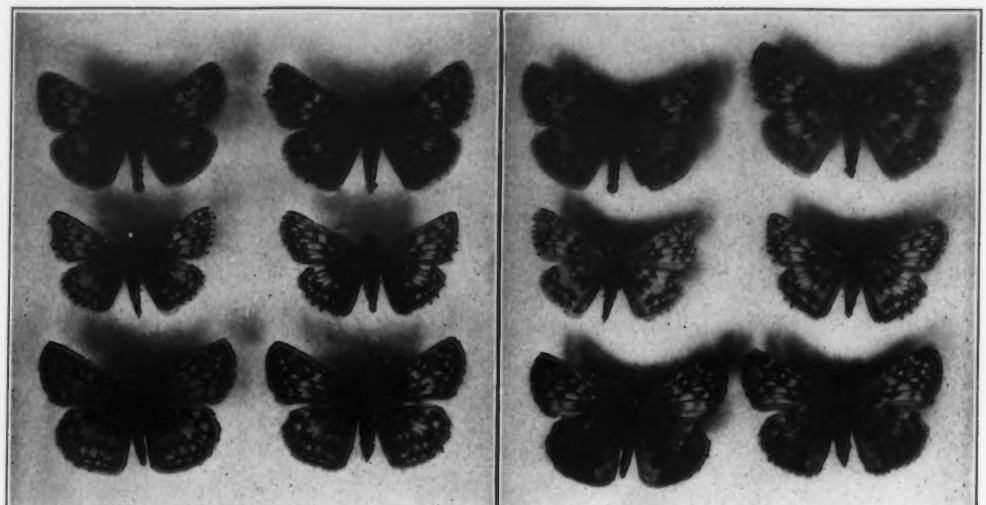
Six specimens from West Point, Nebraska, June 15, 1905; on *Rosa arkensena* (Prof. L. Bruner and Harry Smith).

This species is named after Mr. Myron H. Swenk, from whom I first received the species, in recognition of his excellent work on the bees of Nebraska.

In general form this is like *H. galpinsiae* Ckll., but that species has the head strongly punctured, the mesothorax much more closely punctured, the first segment of abdomen not transversely lineolate, as well as having the entire abdomen black. *H. ovaliceps* Ckll., the only described species from the United States with a red abdomen, has the face much longer and the punctures of the mesothorax much closer and stronger, nervures dark, etc.

This species has a most remarkable resemblance in its general form and color to *Sphecodogastra texana* Cress., which, in addition to its generic differences, also differs in the strong punctures of the head, larger size, first segment of abdomen not transversely lineolate, etc.

The type has been deposited in the National Museum and paratypes in the collections of the American Entomological Society and the University of Nebraska.



UPPERSIDES ♂ ET ♀.

PYRGUS TESSELLATA SCUD.
" OCCIDENTALIS SKINNER.
" SYRICHTUS FAB.

UNDERSIDES ♂ ET ♀.

PYRGUS TESSELLATA SCUD.
" OCCIDENTALIS SKINNER.
" SYRICHTUS FAB.

Studies of Pyrgus syrichtus, tessellata, occidentalis and montivagus.

By Henry Skinner.

(Plate XII)

There has always been much confusion in the literature in regard to *syrichtus, tessellata* and *montivagus.* W. H. Edwards placed the latter as a variety of *tessellata.* Scudder put his *tessellata* as a synonym of *montivagus.* Godman and Salvin in the Biologia also place *tessellata* under *montivagus.* Reakirt's original description gives the locality of *montivagus* as Rocky Mountains, Colorado Territory. (Coll. Tryon Reakirt, "Mexico, near Vera Cruz.")

The Reakirt collection was purchased by Herman Strecker, and in the third supplement to his Rhop. et Het. he says he possesses the types of *montivagus,* "one ♂, one ♀, Rocky Mts., Colorado."

Some years ago I examined these types, and they are *syrichtus Fab.* The original description also applies better to *syrichtus* than to *tessellata,* and I quote as follows: *"Hind wings with a marginal and submarginal row of rounded spots,"—secondaries* (below) *"two transverse white maculate bands; one near the base of three spots, edged posteriorly with brown lines, the other is mesial, of irregular outline, and bordered with black lines on both sides."* The maculate bands in *tessellata* are of a light greenish color, and in *syrichtus* there are no real mocular bands except as an outline in black.* I have never seen *syrichtus* from Colorado, and it is possible there may be an error in regard to Reakirt's locality, such mistakes being common enough in those days. I have a *syrichtus* from southwestern Texas and Key West, Fla., but from no other places in the United States. There can be no question as to what is means by *tessellata.* The original description says *"marginal row of spots on upper side of hind wing reduced to*

*In some specimens the inferiors below are light brown as though covered with a thin wash of this color, and the bands are more or less distinct, but hardly as well marked as in *tessellata* and not greenish in color.

a row of mere points or obsolete. Two pale greenish mocular bands on secondaries below."

Syrichtus ♂ has the inner half of the wings covered by long white downy hairs. The females differ in maculation as do the males of the two species, but the differences are not as well marked. *Syrichtus* ♀ is more brown than black. They may be separated from *tessellata* ♀ at a glance. In the NEWS, vol. xvii, page 96, I indicated a new form under the name *Pyrgus occidentalis*. This is not a species, but only a form or geographical race of *tessellata*. It has bothered me for a long time and has frequently been sent to me to name. It is smaller than *tessellata* and whiter in color, and the spots are larger in proportion to the ground color. It expands in the ♂ 25 mm.; whereas *tessellata* expands 32 mm. This is an average size for the two.

I have specimens from Northwest Territory (Geddes), California, Arizona, and Texas.

Syrichtus and *tessellata* may be compared as follows:

Syrichtus ♂	*Tessellata* ♂.
A marginal row of white spots on upper side of inferiors.	A marginal row of white pin points on upper side of inferiors or obsolete.
Macular bands on inferiors below pale greenish.	Macular bands on inferiors below white or brownish.
Long white downy hair on inner half of wings.	No such hair.

The females may be separated in the same way, except that the white hair is lacking in this sex. According to Godman and Salvin the genitalia of the two are different. The distribution of the species outside of the United States is given in the Biologia.

I HAVE been getting a considerable number of Hesperidæ to name and I am glad to see such an interest in these little butterflies, which have been so much neglected. Outside of the *comma* variations they have splendid specific characters, and with so many recent figures it seems strange that they prove so difficult to collectors. I am always willing to name spread specimens in this family. Mr. J. H. Cook (Sept. Jour., N. Y. Ent. Soc.) is to be congratulated on telling us what *Thanaos ausonius* really is.—HENRY SKINNER.

Notes on Mosquitoes.

By Dr. S. E. Weber, Lancaster, Pa.

(Continued from p. 217, Vol. xvii, No. 6.)

DAY MOSQUITOES.

Culicada Felt (**Culex**) **canadensis** Theobald.

This species I have found to be distinctively a day mosquito. Its peculiar habits are somewhat modified according to the stage of the season. Observations were made in 1901 on this form in southwestern Pennsylvania, along the Susquehanna River, where it was found in abundance breeding in the waters of the old abandoned tide-water canal. The adults made their first appearance May 23rd, when at 10 a. m. a specimen was captured in the act of probing the point of my finger for blood. The last one of the season was seen October 29th in the afternoon.

Their attacks in the early part of the season were invaribly made from 10 a.m. until noon, and in the gloaming of the evening, and by the latter part of September they were noticed during the middle of the day only, and not in the evening, for it seemed now too cool for this species to fly. In October they were numerous in the afternoon, more so between 2 and 3 o'clock, and on warm days were very annoying at that time. In a bark-pile, about 500 yards away from a breeding place, they seemed to have their abode, since they were intolerable at that place. Aside from the *Anopheles* this was the common species found in the immediately locality of Shenk's Ferry, Penna.

That the day-time habit is not only confined to this species is shown by the fact that *C. triseriatus* Say will also make her attacks in day time. In the handling of thousands of *Culex pipiens* none has ever effered to bite me, but *Culicada triseriatus* have alighted directly from the vessel where they were bred on my hand for the first sip of blood.

The same peculiarity may also be noted in other genera, notably in *Anopheles*, but in these species the day-time habit was only noticed in their first appearance in the spring.

ANOPHELES.

The species of this genus most common in the lower Susquehanna River breeding district are *A. maculipennis* Meig. and *A. punctipennis* Say, where I have taken the larvæ from the standing waters in the bed of the tide-water canal.

Day Habits.

Adults of both these species were taken from the windows in houses (on damp days) in March, 1901. In April they become active outdoors, more particularly in a garden where the shrubbery seemed to be full of them, In an old shop, close to this garden, they were also numerous, and at these two places the attacks from these insects were fierce and persistent in day time during the month of April. On the 17th, a warm day, were very numerous and seemed determined for blood. They appeared in the garden mostly in the afternoon and allowed themselves to be pushed from place to place on the back of one's hand. A member of the family while at repose in the middle of the day was bitten on her arm by an *A. punctipennis* in five places, which was caused by the victim in her sleep pushing the mosquito around until five rosy spots with pale centres were left on her arm. This demonstrates the persistence in getting the first sop after a season of rest. The more persistent specimens seem to have been the gravid females. And this peculiarity attending the day habit of these species I have only observed with their first appearance in the spring.

A. maculipennis is the most common in breeding district of the Susquehanna River, where it was found in such abundance that the people living in certain localities were obliged to kill numbers every evening before retiring. In small sleeping rooms in some dwellings gravid females, in some instances of unusual size, even without charge of ova and blood, were taken from rooms where the blood was often extracted from small children. Mosquitoes and malaria in this, like other localities, even these days of better knowledge, is still tolerated. From summer cottages on the banks of the Susquehanna I have known whole families to return home with malarial fever, and numerous individual cases whose infection was received from a visit along the river.

The periodic visits in houses some distance away from the canal bed was a peculiarity observed in this species; these were more prevalent for a few days or a week, and more particularly so on some days just before rain, when they seemed more active in their efforts in trying to get into the houses. Their hibernating as well as abode during activity was found in old shops, pig stables, spring houses, barns, etc.

In the breeding and hibernating place reproduction (see Pl. IX), we find *A. punctipennis* the most common species of the *Anopheles*, which I have found breeding in rain barrels. From observations in neglected yards I infer that these forms breed more in such places than is generally admitted. In the yard illustrated they were found in rain barrels and began to breed in July, lasting until the end of September, being most prolific during the month of August, *e. g.* in 1904, the highest number in a single barrel was four generations, aggregating upwards of 200 *A. punctipennis* larvæ. The egg deposits have been from six to fifty and upward of sixty.

The Natural Enemy.

The dragonflies I have noticed as one of the most important factors in the destruction of mosquitoes in rural districts, but not in cities. I have found several species of mites on the *Anopheles* mentioned, as well as *Chelanops sanborni* and other pseudoscorpions. In the larvæ the protozoa were of much annoyance in the rain barrel generations, some of them being literally covered with *Vorticella* so that their movements were much checked. They were most numerous on the first three abdominal segments where they were out of reach from the larva's mouth brushes, and it required quite an effort for the larvæ to keep them from occluding the air tube. The beautiful flower-like clusters of *Vorticella* are not the only infusorians, since numbers of *Paramæcia* and other animalcules were constantly hovering around them, and even at their mouth with safety, when particles of dust, etc., were eaten with dispatch by the larvæ.

One of the most important points in control work on mosquitoes is to distinguish between the various species of larvæ,

which are the principal factors with which the sanitarian has to deal. Since the young larvæ of *Anopheles* and that of *Culex territans* resemble one another in general appearance, and both possess the same food habit and remain at the surface of the water up to the 4th or 5th day, we may briefly compare the two forms, for it is not within the limits of these notes to give an account of the interesting life history of *C. territans*, which has not been treated completely.

The egg laying process of *C. territans* is somewhat similar to that of *C. pipiens*, the mass is built on the same geometrical plan, but the eggs are smaller and the process of color transformations are different. The mass usually contains about 150 eggs, and are of a canary-yellow color when deposited; the usual color changes taking place in about 10 hours when they may be found changed to a polished black color. The egg state in May and early part of June is about 38 hours. The young larvæ when first hatched differ from those of *C. pipiens* in many respects. Up to about 4 or 5 days old they are of a brown color. The thorax is of a pale or whitish color anteriorly, while the posterior part is brown. The first 3 abdominal segments are of a brown color, but the 4th abdominal segment is colorless, and the 5th, 6th and 7th are dark brown. The general shape is more slender than that of *C. pipiens* of the same age, which renders it a different picture from the latter when seen on the water. It seems more pointed towards the end or wedge shaped like that of *A. punctipennis* of same age, when seen with the naked eye. It requires close observation to recognize the difference from the latter since they are often found of about the same color and both spotted black and white. In *A. punctipennis* the 3rd abdominal segment is white; in *C. territans* the 4th segment is white at the same age. The larvæ of *C. territans* at this period of its life seems to lie horizontally at the surface of the water like *Anopheles*, but virtually it is below the surface, generally to the depth of the length of its breathing tube.

Like the larvæ of *A. punctipennis* those of *C. territans*, when disturbed, will remain on the surface of the water, dart away in different directions in short jerky interruptions of move-

ment. The larvæ of *C. pipiens* when disturbed will immediately take a drop downward in the water and often a whole gregation will descend in the unison of a single larva upon the slightest disturbance.

In my observation on the first generation of *C. territans* larvæ I was surprised on morning of the sixth day of the larva on seeing apparently no larvæ in the vessel. They now changed their habit of remaining on the surface of the water and descended when the vessel was touched, but did not stay down as long as other allied species, and on the whole fed more at the surface than at the bottom. The wide difference psychologicallv removes *C. territans* from the *pipiens* group, and is an example of physical expression or actions, etc., in animal life corresponding with anatomical structure. One of the most marked differences is found in the tracheal system. In the larvæ of the stage above mentioned we find very little more in the development than is present in *A. punctipennis* larvæ at the same stage of life. The main tube of the respiratory system does not contain any dilatation and is of uniform calibre from its opening at the apex of the air tube to its ramifications in the thorax. The system is constructed so widely different from that of *C. pipiens* in the same stage that they may be termed incomparable, but are similar to *Anopheles*. The transformations in the life history of *C. territans* are made with more dispatch than in some other forms, whole generations will pupate inside of 24 hours, and one of the most interesting actions is the quick moulting process; when they have arrived at that period they may be scared out of their skin upon the least provocation. If one of these larvæ is picked up with a pipette it may come out a pupæ, so quick is their transformation. The life cycle of this species occupies generally about 16 days, more or less, according to conditions. Breeding is continuous. Winter is probably passed, as adults which make their appearance the latter part of May.

I HAVE had occasion to look into the validity of *Thecla edwardsii* Saunders as a species, which stands in our lists. I have been unable to find any good reason to separate it from *calanus* Hubn. I will be pleased to have specimens of what is called *edwardsii* and gladly correspond with anyone interested in the subject.—HENRY SKINNER.

Some Utah Orthoptera.

By James A. G. Rehn.

The Brooklyn Institute of Arts and Sciences having received a small but very interesting collection of Orthoptera, collected by one of its expeditions into southwestern Utah, turned the material over to the author for study. The localities represented are all in Iron, Beaver and Piute Counties, except a few specimens from Salt Lake City, and as the region has been little visited the records are of considerable interest and value. A new species of the genus *Platybothrus,* was collected and is described herein.

Acrydium incurvatum (Hancock).

Beaver Creek Hills, Beaver County.

These specimens are perfectly typical of this form, which has been recorded from Washington, New Mexico and Colorado.

Cordillacris affinis Morse.

Buckskin Valley, Iron County; Beaver Creek Hills, Beaver County.

One specimen has the longitudinal bar on the caudal femora as present in *C. occipitalis* in addition to the transverse blotches.

Platybothrus alticola n. sp.

Type.— ♂ ; Beaver Range Mountains, 8,000-10,000 feet, Beaver and Piute Counties, Utah. [Brooklyn Inst. Arts and Sciences.]

Differing from *P. brunneus* (Thomas) in the considerably smaller size, the slightly more angulate fastigium, the more inflated tegmina and more robust caudal femora. From *P. sordidus* (McNeill) it differs in the tegmina being hardly shorter than the tip of the abdomen, in the pronotum being divided about in the middle and in the smaller size.

Size small; form robust. Head with the occiput moderately inflated, the vertex gently declivent to the fastigium, which, when viewed dorsad, is rectangulate with the margins very slightly concave; foveolæ strongly oblong, nearly three times as long as the greatest width, strongly impressed; face slightly retreating, arcuate; frontal costa

broad, slightly narrowing dorsad, failing to reach the clypeal sulcus by a considerable distance, biseriate and irregularly punctate, not sulcate; eye but little longer than broad, in length very slightly greater than the infra-ocular sulcus; antennæ in length somewhat greater than the length of the head and pronotum together, depressed, blunt. Pronotum slightly longer than the head, carinæ distinct, the lateral subparallel to the first transverse sulcus, slightly and regularly expanding to the caudal margin; cephalic and caudal margins broadly obtuse-angulate, that of the caudal margin more marked than of the cephalic, principal transverse sulcus cutting the median carina about in the middle; lateral lobes regularly but not greatly narrowed ventrad, the ventral width contained about once and a half in the depth. Interspace between the mesosternal lobes nearly twice as broad as long; interspace between the metasternal lobes cuneiform. Tegmina reaching to the tips of the cerci, inflated the broad costal field extending practically to the apex, which is narrowly rounded and nearer the sutural than the costal margin; anal field with its margin gently arcuate. Wings considerably shorter than the tegmina. Cephalic and median limbs not inflated. Caudal femora slightly longer than the tegmina, the greatest width contained about three and a half times in the length; caudal tibiæ with thirteen spines on the external margin.

General color ecru drab marked with seal brown. Head with a line ventrad of the foveolæ, the infra-ocular sulcus and a line behind the eyes seal brown, while the dorsal aspect of the head is broccoli brown; antennæ drab except proximad where the general color is present. Pronotum with the maculations on the lateral lobes usually found in this genus seal brown, with a general tone of broccoli brown dorsad, marked mesad of the lateral lobes with clove brown, which fades toward the median carina. Tegmina wood brown with a number of irregularly placed faint maculations. Abdomen marked with clove brown as usual in the genus. Caudal femur with three oblique fasciæ on the dorsal half of the lateral face, seal brown in color, a cloud of the same color is present at the base of the ventral section of the genicular lobes and the genicular arches are clove brown; caudal tibiæ vermilion, pale proximad and distad, spines black in their apical half.

MEASUREMENT.

Length of body	14.5 mm.
Length of pronotum	3 mm.
Length of tegmen	8.5 mm.
Length of caudal femur	9.6 mm.

A paratypic male has also been examined.

Stirapleura decussata Scudder.

South Creek, Beaver County; Beaver Creek Hills, Beaver County.

This species presents a great amount of color variation, some individuals being quite dull and unicolor, except for the markings on the tegmina and limbs, while others have the head and pronotum strikingly marked with dark brown.

Stirapleura delicatula (Scudder).

Buckskin Valley, Iron County; Beaver Creek Hills, Beaver County.

These fully agree with a Kansas specimen.

Aulocara elliotti (Thomas).

Beaver Creek Hills, Beaver County.

Arphia canora Rehn.

Beaver Creek Hills, Beaver County.

This specimen has the fastigium slightly thicker than in typical *canora*, while the general size is slightly less, but otherwise it is inseparable.

Arphia teporata Scudder.

Beaver Creek Hills, Beaver County.

The specimens examined possess red wings and agree fairly well with representatives from Otero County, New Mexico.

Chortophaga viridifasciata (De Geer).

Buckskin Valley, Iron County.

Camnula pellucida (Scudder).

Beaver Canyon and Beaver Valley, Beaver County; Beaver Creek Hills, Beaver County.

Hippiscus corallipes (Haldeman).

Beaver Creek Hills, Beaver County; South Creek, Beaver County.

Specimens with the disk of the wings both red and greenish-yellow have been examined.

Hippiscus neglectus (Thomas).

Beaver Creek Hills, Beaver County; South Creek, Beaver County.

Considerable variation is noticed in this species, some individuals being decidedly blackish, others have the arcuate band

of the wings faint and one has the caudal margin of the pronotum distinctly marked with pale buff, which strongly contrasts with the blackish-brown of the pronotum.

Hippiscus calthulus (Saussure).

Beaver Creek Hills, Beaver County.

These specimens (♂ and ♀) do not wholly agree with Saussure's description, but are no doubt nearer this species than *H. lateritius* (Saussure), which has the internal face of the caudal femora unicolor instead of fasciate and the metazona transversely plicato-rugose cephalad. The wings in the specimens examined are red.

Dissosteira spurcata Saussure.

Salt Lake City.

Three males and one female of this species constitute the first record outside of California and Oregon.

Derotmema cupidineum Scudder.

Beaver Creek Hills, Beaver County.

Derotmema rileyanum Saussure.

South Creek, Beaver County.

A specimen from Salt Lake City is also doubtfully assigned to this species.

Trimerotropis ferruginea McNeill.

Beaver Creek Hills and Beaver Canyon, Beaver County.

One specimen of this species is quite hoary, but is otherwise inseparable from a normal dull ferruginous male from the same locality.

Trimerotropis laticincta Saussure.

Beaver Creek Hills, Beaver County.

This species has been recorded from Colorado, New Mexico, Texas and Nebraska.

Trimerotropis strenua McNeill.

Beaver Creek Hills, Beaver County; Salt Lake City.

Trimerotropis vinculata Scudder.

Beaver Creek Hills, Beaver County.

Trimerotropis cyaneipennis Bruner.

South Creek, Beaver County.

Circotettix carlinianus (Thomas).

Beaver Valley, Beaver County.

Circotettix suffusus (Scudder).

Beaver Canyon, Beaver County.

Circotettix undulatus (Thomas).

Beaver Creek Hills, Beaver County.

Heliastus aridus (Bruner).

Beaver Creek Hills, Beaver County; South Creek, Beaver County; St. George, Washington County.

Schistocerca venusta Scudder.

Beaver Canyon, Beaver County.

Melanoplus cinereus Scudder.

Salt Lake City.

Melanoplus atlanis (Riley).

Beaver Creek Hills, Beaver County.

Melanoplus femur-rubrum (De Geer).

Beaver Canyon, Beaver County.

Melanoplus packardii Scudder.

Salt Lake City; Beaver Creek Hills, Beaver County; Beaver Range Mountains, 8,000-10,000 feet.

The single female from Salt Lake City is considerably larger than the two males from southwestern Utah, and slightly larger than the Beaver Range Mountains female.

Melanoplus bivittatus (Say).

Beaver Valley.

Scudderia furcata Brunner.

Beaver City, Beaver County.

Anabrus simplex Haldeman.

Wildcat Valley, Beaver County.

Steiroxys pallidipalpus (Thomas).

Beaver Canyon, Beaver County.

Œcanthus niveus (De Geer).

Beaver Creek Hills, Beaver County.

A New Limacodid.

By John A. Grossbeck.

Monoleuca spadicis n. sp.

♂.—Expanse, 22 mm.—Head and thorax bright cinnamon-brown; abdomen buff, reddish at the apex of the segments. Primaries light cinnamon-brown, the outer half somewhat paler; fringe partially dark like basal half. A narrow sinuous white line begins one-third from the base a little below cubitus and extends inwardly obliquely to the inner margin, but does not cross the fringe. A few white scales forming an indistinct broken line on the outer fourth of the wing can also be made out; this begins at the costa and extends but a short distance into the wing. Secondaries uniformly concolorous with the outer portion of the primaries. Beneath both wings are reddish buff, darker on the costal area.

Habitat:—Minnehaha, Ariz., August 26. One specimen in good condition from Mr. Hutson.

Type:—Col. J. A. Grossbeck.

This is the only western species of the genus so far known. It is a close ally to *subdentosa* Dyar, but in that species the transverse band is upright and sharply angulate.

Pyrgus centaureæ Ramb.

Occasionally, a particular insect is brought to the notice of entomologists in "Notes and News," or otherwise by a record of a capture, a new locality, or by an unusually late or early appearance, and though some of us have had experiences with the same insect we rarely bring out our own observations until we see that some one else has begun. Then not infrequently a general interest is aroused and the notes resulting form a really valuable contribution to our knowledge of the species. I saw Dr. Skinner's note on the above species in the June, 1905, number of the "News," and that by Mr. Cook in the March, 1906, issue, and I thought perhaps a note of mine might not be devoid of interest since it appears that the species is usually taken in single examples only or in threes or fours at most. I have collected on the Garret Mountain, at Paterson, N. J., every spring for the past five years, and find *centaureae* on the wing sparingly about April 25; in the first days of May it is fairly abundant and is then in a very fresh condition. I have taken a dozen in a walk of a few hours and have seen

others, when the species was not the special object of my search. May 14 is the date of my latest capture, but the specimens at this time are very worn, for their period of flight is short. They are found almost always in open spaces surrounded by trees, where the sun shines hottest, skipping around the bluets (*Houstonia caerulea*), which often carpet the ground in these places. They are very wary and most easily lost sight of on account of their manner of flight and their sombre color. To go after these insects on a cloudy day would be quite useless, for they seem to prefer nooks where scarcely a breeze blows, and disappear among the grass even while the sun is obscured by a passing cloud.

Macrosiphum granaria Buckton.

By C. E. Sanborn.

Winged viviparous female.

Head yellowish green; antennæ; first and second segments also base of third concolorous, remainder black. Length of segments, 1, 0.13 mm.; 2, 0.08 mm.; 3, 0.56 mm.: 4, 0.48 mm.; 5, 0.39 mm.; 6, 0.11 mm.; 7, 0.67 mm. Total length 2.49 mm. The sixth segment extends to the caudal end of the style. Sensoria circular, seven to ten on the third, nearly in a straight row, none on the fourth, the usual distal one on the fifth, and a group of seven or eight small ones at the distal end of the sixth segment. Eyes dark red, occular tubercles prominent, ocelli prominent. Beak, first segment concolorous, second and third dark, 0.58 mm. long, extending to the meta-coxæ.

Prothorax yellowish green. Thoracic lobes dark, insertions yellowish; wings deflexed and normal, veins brownish, stigma smoky gray, 0.83 mm. long by 0.15 mm. broad. Total wing expansion 7.3 mm. Femora yellowish green proximally, and dark distally. Tibia yellowish green except distals, which are dark. Tarsi black.

Abdomen glabrous, yellowish green. Honey tubes cylindrical, black, strongly reticulated, 0.41 mm. long, extending a little caudad the base of the style. Latter yellowish green, halbert shaped, with a few setaceous hairs, 0.33 mm. long.

This form was found colonizing the leaves and stalks of oats June 3, 1904, at College Station, Texas.

What is apparently the same species was sent from the Naturhistorisches Museum zu Hamburg, by Dr. L. Rep, collected February 10, 1904, on oats, at Boernsen, Germany.

On the parasites of Diaspis pentagona.

By L. O. Howard, Washington, D. C.

Diaspis pentagona has long been a resident of the District of Columbia, surely since 1892, when it was discovered on the grounds of the U. S. Department of Agriculture (Insect Life, vi, 287). Its prevalence in Italy upon the mulberry tree renders it a very dangerous enemy of the silk industry in that country, and Italian entomologists, notably the late Professor Targioni Tozzetti and Professor Antonio Berlese, have long sought means of eradicating it. In the absence of records of parasitism it was not at first thought to be at all feasible to utilize its natural enemies. In the summer of 1905, however, Professor Berlese urged the writer, in Florence, to send to Italy branches of trees infested by the *Diaspis* from America in the hope that parasites might be reared. Curiously enough, this scale does not seem to attack mulberry in the United States, and on the grounds of the Department of Agriculture there existed, until within a short time, a peach tree literally covered with the scale, within a hundred yards of mulberry trees which did not become infested. In the spring of 1906, during the writer's absence on a second trip to Europe, Mr. Marlatt secured a number of branches of lilac from the District of Columbia all abundantly infested by the scale, and sent them, carefully packed, to Professor Berlese. From these scales were bred in Florence three species of parasites: the first, *Tetrastichus canadensis* Ashmead; the second, *Prospalta murtfeldtii* Howard, and the third, a new species of *Prospalta*. On the writer's return to Washington at the end of May other branches were taken from the same tree, and rearing experiments were begun here. More than 200 specimens of the new species of *Prospalta* have been reared, 25 to 50 specimens of *Ablerus clisiocampae* Ashmead, and two specimens of *Perissopterus pulchellus* Howard. We have, then, four species of primary parasites of *Diaspis pentagona* to place on record, as follows:

(1) *Prospalta berlesei* n. sp. One specimen reared in Florence by Professor Antonio Berlese from scales sent from Wash-

ington, and more than 200 specimens reared at Washington from June 20 to July 5, from scales taken from the same tree.

(2) *Ablerus clisiocampae* Ashmead. Originally supposed to have been reared from the eggs of *Clisiocampa,* but, with little doubt, in reality reared from some Diaspine scale covered by *Clisiocampa* egg-mass. Subsequently reared from *Chionaspis furfurus,* in the District of Columbia, and from *Aspidiotus forbesi* on pear and apple, from Champaign, Ill., the latter rearing by Mr. W. G. Johnson.

(3) *Perissopterus pulchellus* Howard. Originally reared from a *Lecaniodiaspis* on linden in the District of Columbia in 1879; later from a *Lecaniodiaspis* from East Atchison, Mo.; from *Chionaspis pinifoliae* from Providence, R. I., and from *Aspidiotus forbesi* on currant at Champaign, Ill., the latter rearing having been made by Mr. W. G. Johnson; now reared in two specimens from *Diaspis pentagona* at Washington.

(4) *Prospalta murtfeldtii* Howard. Originally reared from *Aspidiotus uvae* by Miss Mary E. Murtfeldt at Kirkwood, Mo., in 1888; later from *Aspidiotus forbesi* on cherry and currant by Mr. W. G. Johnson at Champaign, Ill., and now reared by Professor Antonio Berlese from *Diaspis pentagona* at Florence, Italy, received from Washington, D. C.

(5) There is also one, presumably hyperparasitic, reared by Professor Berlese at Florence from *Diaspis pentagona* received from Washington, D. C. This is *Tetrastichus canadensis* Ashmead.

It now only remains to describe the new *Prospalta,* remarking upon the strange fact that this presumably American species should have first been reared by Professor Berlese in Florence.

Prospalta berlesei n. sp.

Female.—Length, 0.73 mm.; expanse, 1.47 mm; greatest width of fore-wing, 0.19 mm. Comes close to *P. aurantii.* Joint one of funicle about as long as pedicel, but slightly narrower; joint two rather shorter than joint one; joint three longer than joint one, and a little broader; club joints subequal in length, and each about as long as joint three of funicle; the basal joint very slightly wider than joint three of funicle, and the terminal joint tapering from near base to its pointed tip. In general effect the flagellum is longer and more filiform than in *P. aurantii.* Surface of thorax smooth. General color, a bright straw-yellow;

ocelli coral-red, eyes black; mesoscutellar parapsides black; abdomen fuscous, with narrow, light yellow bands between the segments; metanotum fuscous; antennæ light yellow-brown; legs yellowish; wings hyaline, with a very slight dusky shade on disc; veins yellowish; forewings

as with *P. aurantii,* but proportionately slightly longer and broader; disc densely, uniformly covered with very short cilia; marginal cilia of both wings as with *P. aurantii.*

Male.—Unknown.

Described from many specimens reared from *Diaspis pentagona,* Washington, D. C., June, 1906.

Type No. 9942, U. S. National Museum.

Additional Species of Minnesota Diptera.—Since the printing of the Tenth Annual Report of the Minnesota Entomologist, in December, 1905, about 75 additional species of Diptera, captured in that State, have been named, representing the following families:

Agromyzidæ, Anthomyidæ, Bibionidæ, Cecidomyidæ, Chiromonidæ, Culicidæ, Dolichopodidæ, Drosophilidæ, Empidæ, Ephydridæ, Geomyzidæ, Helomyzidæ, Leptidæ, Lonchopteridæ, Muscidæ, Mycetophilidæ, Ortalidæ, Oscinidæ, Pipunculidæ, Psilidæ, Sapromyzidæ, Scatophagidæ, Sciomyzidæ, Sepsidæ, Simuliidæ, Syrphidæ, Tachinidæ, Trypetidæ.

These species have been listed, and a copy of the list mailed to each Station Entomologist and others known to be interested. Any one failing to receive a copy, and desiring one, can obtain it by writing to Mr. F. L. Washburn, Experiment Station, St. Anthony Park, Minn.

Glossina palpalis wellmani: a new Tse-Tse Fly which disseminates human trypanosomiasis.

By F. C. Wellman.

Published under the imprimatur of the Amer. Soc. Tropical Medicine.

(Plate XII)

INTRODUCTION.

When in London last year I was asked by the Dipterologist of the British Museum, Mr. E. E. Austen, to see if I could establish the presence of Tse-tse flies in southern Angola, from whence no specimens had up to that time been received. On arriving at Benguella I accordingly made a short journey up the Katumbela River for this purpose, and succeeded in taking a number of specimens of a fly, some of which I sent to Mr. Austen for determination. I then supposed from my *amateur* examination of the flies that they were *Gl. palpalis* Rob.-Des., as I knew that this fly is the principal Tse-tse fly of the west coast,* although I had received some specimens of what I believed to be *Gl. morsitans* from the interior to the east.† I have since received a letter from Mr. Austen, however, concerning them, in which he writes as follows: "The present specimens show that the form of *Glossina palpalis* found in Benguella represents a new subspecies, distinct from the typical form. I have therefore named it in your honor—*Glossina palpalis wellmani.*" Although Mr. Austen's systematic description of the fly‡ is available, yet in view of the probable future importance of the animal to medical men practicing in southwest Africa, I have thought it worth while to in these columns call further attention to this new subspecies.

Glossina palpalis wellmani Austen (1905), Ann. and Mag. Nat. Hist, ser. 7, vol. xv, April, 1905, p. 390.

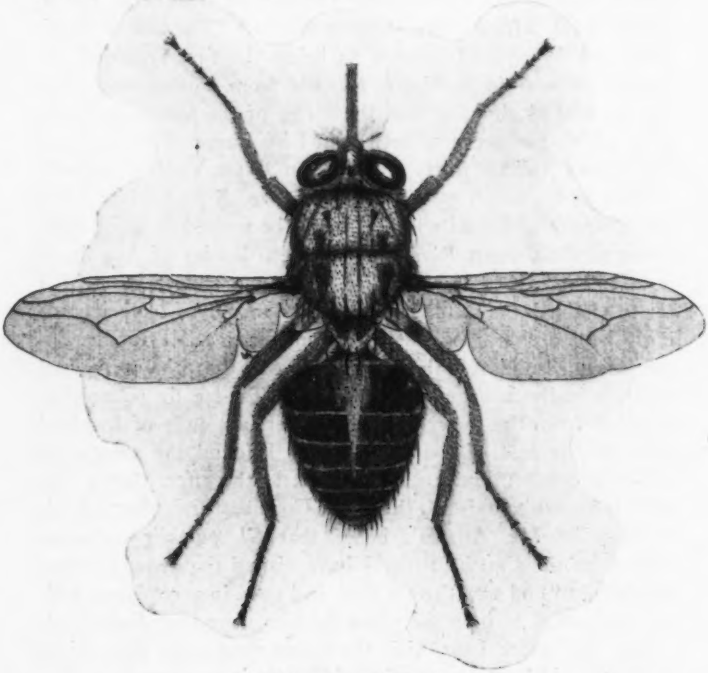
♂, ♀.—Frontal stripe pale ochraceous; thoracic markings much reduced, so that *the thorax in a well-preserved specimen appears spotted,* the antero-lateral markings taking the form of spots or blotches; the

Vide Austen, A Monograph of the Tse-tse Flies, 1903, p. 75.

†*Vide* New York Medical Journal, August 12, 1905, p. 329. This collection was accidentally destroyed but I have sent to the same district for more.

‡Annals and Magazine of National History, Ser. 7, Vol. xv, April, 1905, p. 390.

spot immediately behind the inner extremity of the humeral callus on each side small, ovoid, or nearly circular, and especially conspicuous when the insect is viewed from above and slightly from behind; femora pale, the dark blotches much reduced.



Glossina wellmani.

Katumbela River, Angola, W. Africa; November, 1904 (*Dr. F. C. Wellman*). Six specimens (1 ♂, 5 ♀). Types in British Museum.

Remarks. In the paper containing his description just quoted Mr. Austen says, "The British Museum possess two females of *Gl. palpalis* from the Gambia (*Dr. J. E. Dutton*) belonging to a form somewhat similar to *wellmani;* in the Gambian form, however, the ground-color of the abdomen is paler and the thorax is less conspicuously spotted."

HABITAT.

My specimens were taken in a small district lying along both banks of the lower stretches of the Katumbela River, which empties into the sea near the port of Benguella, Portuguese West Africa. Mr. Austen writes,* "The above specimens are of especial interest as being the first recorded examples of any form of *Gl. palpalis* from Portuguese West Africa, and as showing that the range of the species in question, which has recently been stated by Laveran† to occur at Sengaleam (about thirty miles from Cape Verde), extends at least as far south as 12° 30′ S. lat. In all probability *Glossina palpalis wellmani* will eventually be proved to exist right down to the Cunene River, the southern border of Angola, if not further." Mr. Austen also wrote me suggesting that I try to establish the southern limit of the new fly. I have accordingly kept a sharp lookout for it and have made further inquiries concerning it with the meager result that I have received a single badly-damaged specimen of a Tse-tse fly purporting to come from the lower Kukema River, a couple of hundred miles to the east of the place where I found the subspecies under discussion, and a native report to the effect that a "fly belt" is known to exist on the upper Coanza still further inland. In view of Mr. Austen's belief that *Gl. palpalis wellmani* extends to the Cunene River I have visited the upper Cunene but failed to find any Tse-tse flies, and now, in accordance with his suggestion, written me when the flies were first discovered, I hope to, before long, visit the lower river with this object in view.‡ At least one species of Tse-tse is common in northern Angola and along the lower Coanza. This may very possibly be *wellmani*. The distribution of the species *palpalis* (with its subspecies and varieties) is now known to extend practically from Cape Verde to Damara Land.§

*Ann. and Mag. Nat. Hist. *loc. cit.*

†*Comptes Rendus des séances de l'Academie des Sciences,* t. cxxxix, p. 659.

‡ Mr. Ralstone, of the Benguella Railroad, has recently informed me that a Tse-tse fly is found lower down on the Cunene River. This is very probably *Gl. palpalis wellmani.*

§ Austen, Reports of the Sleeping Sickness Commission of the Royal Society, No. vi. August, 1905, pp. 279-80.

NOTE ON BIONOMICS.

I can offer no extensive contribution to our knowledge of the habits of the subspecies. I present here a few special notes made at the time of collecting. "Although the district in which the flies were taken contains some game, including eland (*Oreas canna livingstonei*), kudu (*Strepsiceros kudu*), roan antelope (*Hippotragus equinus*), the duyker (*Cephalolophus grimmi*) and Speke's tragelaph (*Limnotragus spekei*), yet I believe that human blood forms the greater part of their food. This is undoubtedly true over at least a part of the 'belt.' Along the right bank of the lower Katumbela from a place called Esupua to a point half a day's march up the river there lies the great Benguella caravan route near which there is little or no big game and over which constantly pass great caravans of half-naked Bantu rubber, slave and ivory traders. At Esupua one may see half a dozen of these large caravans camping in one place. It is here that the flies are most plentiful. They hide in the tall grass and sedges near the river, also on stones, trunks of trees and vines, and among the leaves of the low trees on the bank. When a native is sent to the river for water the flies rise from their resting places as he passes and follow him seeking for an opportunity to bite. On several different occasions I followed natives going to the river to fetch water. One of these was bitten twice, three were bitten once each, and seven were not bitten at all. The Bantus say the bite is painful, and I noticed that if a fly settled on a porter's back the man always slapped himself as it began to insert its probosces. Some of the specimens I took had abdomens greatly distended with blood. The flies do not always remain so close to the river. The first one I saw was between three and four hundred yards from the river in thin 'desert' bush, consisting of *Acacia reficiens* and other thorny shrubs which afford practically no shade. I do not believe *Gl. palpalis wellmani* shares the dislike for human ordure which has been ascribed to its congeners. I have frequently seen it in and around the filthiest native camps at some distance from the river where it had evidently gone for the purpose of sucking human blood. I have made no observations on the life history. I dissected an incomplete larva out

of the abdomen of a female. It was, I judge, rather more than 2.0 mm. long and of a light dirty yellow color. I have sent to Esupua to procure if possible some living flies and also some in alcohol so as to be able to send Mr. Austen a series of larvæ. The pupa I have not seen."

THE NEW FLY AND TRYPANOSOMIASIS.

I have lately seen three cases of human trypanosomiasis, all of whom had been frequently in the "fly belt" at Esupua. About 500 blood examinations were made, so that about three

Fig. 1.—*Tr. ? gambiense* Dutton.

out of every 500 natives living in the districts adjacent to the Esupua "fly belt" harbor trypanosomes in their blood. The trypanosome found seems to be morphologically identical with *Tr. gambiense* Dutton. The shape of the posterior end, the arrangement of the controsome, nucleus and flagellum, as well as the "set" of the organism on the slide, correspond with the same points in *Tr. gambiense.* The protoplasm stains somewhat irregularly with Romanowsky, taking on a basophilic reaction. The centrosome stains a dark purple, and the flagellum, which stains pink, seems to rise from or near it. The nucleus lies near the middle of the body and often occupies more than two-thirds the width of the parasite. It is oval in shape and stains red like other chromatin material. Following are measurements of a stained specimen of the parasite:

Length .....(about)	24
Greatest width	3.5
Distance of centrosome from posterior end.....	3
Length of free flagellum.....(about)	9
Largest diameter of nucleus.....	4

I have described and figured this parasite in another communication to which I refer the reader.* While sleeping sickness does not seem to be endemic as yet in the districts adjacent to the Esupua "fly belt,"† yet it is endemic in many situations in Angola from the north bank of the Coanza River clear to the Congo. As the country is being opened up it is inevitable that cases will from time to time be brought from the northern sleeping sickness centers to districts in the south, since many firms have trading posts and the Government has forts in both districts between which native soldiers and laborers are constantly being transferred. More forts are constantly being planted and trading posts established. The Umbundo-speaking Bantus, who number about 200,000, live to the east of the belt infested by the fly, and most of the males of these tribes are porters and rubber traders and constantly pass through the Esupua "fly belt," through which such occasional cases of trypanosomiasis‡ from Malange, Cazengo, Ambaca, Dondo and other points in the sleeping sickness districts north of the Coanza, to which I have above referred, are carried by the activities just mentioned. Thus, the flies have and will have more and more favorable opportunities to become infected and to infect the Umbundos among whom I have recently demonstrated the occasional presence of trypanosomiasis. I believe for several reasons that this presence of trypanosomiasis among the natives of south Angola is a recent development. Some of these reasons are:

(1) Two years ago I examined a series of nearly 400 of these natives with a negative result.†

(2) Recently about 500 examined by me revealed three infected individuals in practically the same district.

(3) No cases of sleeping sickness *originating* in the district have yet been seen.

*Interim Report on Trypanosomiasis in Portuguese Southwest Africa.

†*Vide* Wellman, Notes from Angola (Note X, *Jour. Trop. Med.*, November 15, 1905, p. 327..

‡As sleeping sickness cases are occasionally transported, those in the earlier stages of trypanosomiasis are undoubtedly also brought south.

†*Vide Jour. Trop. Med.*, February 15, 1904, p. 53.

(4) Sleeping sickness is reported to be spreading *southward* through Angola.

In view of the considerations brought forward under this head, we need not be surprised (if we remember the history of the spread of scourges of Uganda and the Congo) if *Gl. palpalis wellmani* play in the near future a leading *rôle* in West African Medical History.

RELATION OF GL. PALPALIS WELLMANI TO OTHER TSE-TSE FLIES.

The Tse-flies are known from other members of the same family by the palpi forming a complete sheath for the proboscis, by the peculiar antennæ with branched hairs on the upper surface only of the arista, by the characteristic wing venation, by the wings closing over one another like scissors, by the grooved wing membrane and by the peculiar hypopygium of the ♂. Following are brief notes on the known species with some special remarks on the particular species to which belongs the fly we have been discussing.

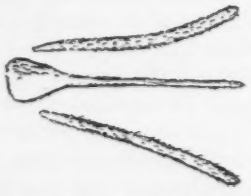


Fig. 2.—Proboscis and palpi of *Gl. palpalis wellmani* separated and magnified.

Genus **GLOSSINA** Wiedemann.

(1) *Glossina tachinoides* Westwood.—Described in 1850. Carries *Trypanosoma brucei* of nagana, the Tse-tse fly disease of game and domestic animals in Africa. Hind tarsi dark; abdomen buff with dark transverse bands, oblong pale area in center of second segment. Small species. Length 8 mm.

(2) *Gl. palpalis,* Robineau-Desvoidy.—Described in 1830. Carries *Tr. gambiense,* the parasite of human trypanosomiasis, which is considered to be the chief factor in sleeping sickness, and also *Tr. brucei.* Abdomen brown with triangular pale area in center of second segment. Darker than preceding and a larger species. Third joint of antennæ dark. Length 8-9 mm.

It is a variable species and under it falls the subspecies above considered:

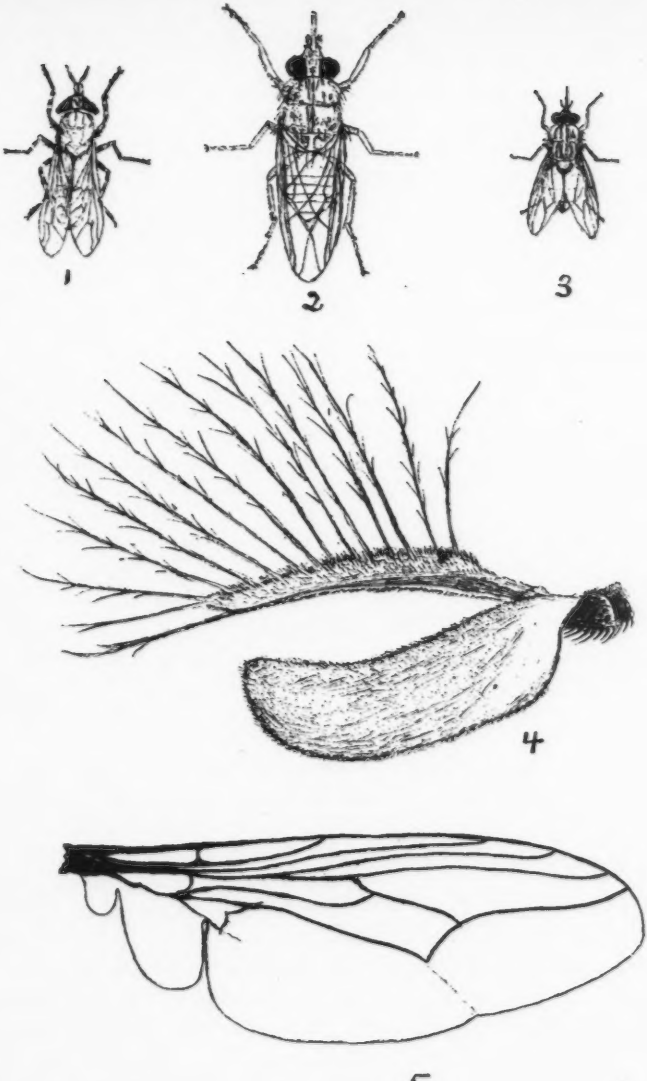


FIG. 1. HÆMATOPOTA. FIG. 2. GLOSSINA. FIG. 3. STOMOXYS.
FIG. 4. RIGHT ANTENNA GL. WELLMANI. FIG. 5. WING OF GL. WELLMANI.

FIRST THREE FIGURES SHOW RESTING POSITION OF SOME BLOOD-SUCKING FLIES.

Gl. palpalis wellmani Austen.—Described in 1905. Differs from type by having the frontal stripe pale ochraceous; thoracic markings much reduced, presenting a spotted appearance; spot behind humeral callus small, avoid or nearly circular; femora pale, the dark blotches much reduced.

There is also an unnamed variety which was at first designated *Gl. palpalis* var. *tachinoides* Westw., and was thought to represent a fly which, when true specimens were obtained, was recognized by Mr. Austen to be of specific rank (*Gl. tachinoides* Westw. [*vide supra*]), the variation from *Gl. palpalis* remaining unnamed at last accounts received here, and I therefore set it down for the purposes of this paper as

Gl. palpalis var. *a.*—It is distinguished from *Gl. palpalis* principally by its pale femora and a yellow median stripe on the abdomen.* There is also another variation from the typical *Gl. palpalis* which may be differentiated as follows:

Gl. palpalis var. *b.*—Femora still paler than foregoing; palpi pale except at tips; abdomen reddish brown with the pale area on second segment oblong.†

(3) *Gl. pallicera* Bigot.—Described in 1891. Color brown to mouse grey. Resembles *Gl. palpalis* except that third joint of antennæ is pale (orange buff). Length 8 mm.

(4) *Gl. pallidipes* Austen.—Described in 1903. Carries *Tr. brucei.* Mouse brown with longitudinal markings. Front and middle tarsi generally tipped with pale brown or yellow. Large species. Length about 11 mm.

(5) *Gl. longipalpis* Wiedemann.—Described in 1830. Differs from preceding in having black tips to last two joints of front and mid tarsi. Thorax olive grey; head broad; hypopygium in ♂ smaller, darker and more hairy than in foregoing species. Length 9-11 mm.

(6) *Gl. morsitans* Westwood.—Described in 1850. Carries *Tr. brucei.* Smaller and head narrower; hypopygium of ♂ also larger and paler than in foreging. Thorax pale in front with brownish longitudinal markings. Eyes in both ♂ and ♀ converge towards vertex. Tips of last two joints of tarsi dark, Resembles *Gl. pallidipes.* Length 7-9 mm.

*Brit. Med. Jour., loc. cit.
†*Ibid.*

(7) *Gl. longipennis* Corti.—Described in 1895. Carries *Tr. brucei* and probably another trypanosome of camels and mules. Brownish; dorsum of thorax with four sharp, dark oval spots in form of parallelogram, two in front and two behind transverse suture. Bulb of proboscis brown at tip. Large species. Length 10-11 mm.

(8) *Gl. fusca* Walker.—Described in 1849. Thorax drab. No spots on dorsum of thorax as in preceding; bulb at base of proboscis not brown at tip (pale yellow); abdomen russet brown. Large pale species. Length 11-12 mm.

In conclusion, I wish to thank Mr. Austen, the well-known authority on Tse-tse flies, who kindly examined and described my collections and suggested to me the study of the distribution and pathological importance of the subspecies discussed in this paper.

New species of Vespoidea from Connecticut.

By H. L. Viereck.

Tiphia waldonii n. sp.

Related to *floridana*, from which it is readily distinguished by its structure and the color of the wings.

♂ 8 mm.—Color black. Face shining in part, largely opaque, and mostly closely punctured, the punctures adjoining and sufficiently coarse to give a rugulose appearance. The portion of the face immediately anterior to the anterior ocellus is shining and has well separated punctures. The vertex is sculptured in the same way as the preceding area. The distance between the posterior ocelli is not quite as great as that between them and the nearest eye margin. The second joint of the antennæ nearly as thick as the third and of the same length or a trifle shorter. Excepting the first joint, the joints of the antennæ are subequal. Pronotum distinctly margined anteriorly. The pronotum, mesonotum and scutellum punctured in much the same way as the vertex. The postscutellum reticulate. The metanotum with two oblong areas, that are adjoining and approximately three times as long as wide at base, being a little narrower at the apex than at the base. These areas are formed by rather distinct raised lines, and the spaces themselves are somewhat shining and somewhat roughened. The first abdominal segment approximately as in *floridana*. The median tuberculate impunctate at apex of first dorsal abdominal segment extending to the apical margin. The succeeding abdominal segments all punctured, the apical more closely than the basal segments. The wings are hyaline,

cloudy shade. The stigma very dark brown, the nervure brownish testaceous. The third abscissa of the radius with the second transverse culbitus forming an obtuse angle. The tuberculate process on the first abdominal segment is apparently not normal, as in the paratype it is absent.

Type locality.—New Haven, Conn.

One male collected by B. H. Waldon, August 16, 1904. Paratype male from North Haven, Conn., by the same collector, August 3, 1905.

Tiphia brunneicornis n. sp.

In many respects this answers the unsatisfactorily brief description of *tarda* (say). From the same, however, it differs in having the stigma brown instead of black. Color black, face mostly shining, with close and with greater part almost adjoining punctures.

♂ 7 mm.—The vertex polished and with the punctures quite separate. The distance between the posterior ocelli approximately a little greater than that between them and the nearest eye margin. The relation between the antennæ joints practically as in *waldonii*. The pronotum, mesonotum and scutellum bearing the same relation to the vertex as in the preceding species. The postscutellum closely punctured, having a rugulose appearance. The enclosure on the metanotum in the form of a trapezium, forming but a single area, with the basal and apical sides parallel, the apical side being a little shorter than the basal side. The area shining and finely roughened. The wings practically as in *waldonii*, but the etoid abscissa of the radius forming with the second transverse cubitus a reversed figure "3." Abdomen polished with the first and second segments sparsely, finely punctured, the punctures on each succeeding segment becoming closer and more distinct. The first abdominal segment with a median transverse groove as in *waldonii*.

Type locality.—New Haven, Conn.

One male collected by H. L. Viereck, July 6, 1904.

Tiphia eyregia n. sp.

♂ 6 mm.—Head and thorax approximately as in the preceding species. Wings as in *waldonii*. Abdomen as in *brunneicornis*, but there is no transverse median groove on the first abdominal segment. The mandibles almost entirely blackish. The antennæ brownish beneath, and the tarsi brownish. The area of the metanotum partially bisected by a median raised line. Inclosure is nearly smooth, being finely roughened.

Type locality.—New Haven, Conn.

One male collected August 3, 1905, by H. L. Viereck. Paratype male, collected at West Rock, New Haven, Conn., August 13, 1905, by the same collector.

Tiphia relativa n. sp.

In structure and sculpture approximately like the preceding species. The antennæ entirely black and the tarsi more blackish than brownish. The inclosure is rather coarsely rugulose with no trace of a bisecting line. In the paratype the inclosure is more or less completely bisected. The typical form has the wings colorless, excepting the nervures and the stigma. Four of the paratypes belong to a variety with brownish wings.

Type locality.—North Haven, August 3, 1905 (B. H. W.). The var. from E. Hartford, August 2, and Scotland.

Odynerus (Ancistrocerus) waldonii n. sp.

Closely related to *birenimaculatus,* but with ornaments white as in *albophaleratus.*

♀ 13 mm.—In most respects like *birenimaculatus.* The metathorax, however, different in that the ridges bordering the posterior aspect are not very transient and lacking two sharp teeth at the summit. The maculation differs as has already been pointed out. In addition to the difference in color, there is a difference in extent and pattern. For example, the scape, postscutellum and metathorax are immaculate, excepting four small dots on the postscutellum. The second dorsal abdominal segment is immaculate, except the apical margin. The clypeus has two brown dots, one a short distance on either side of the center or near the center. There is a median longitudinal brown line on the posterior fourth of the clypeus, extending to the superior margin of the clypeus. On the anterior third of the clypeus, extending to the anterior margin, there is a brown funnel-shaped mark, terminating in a brown line. There are no two lateral oblique spots on the first abdominal segment. The coxæ are immaculate, as are the femora, except a yellow spot at apex of the anterior femora, and more or less brownish at anterior aspect of the anterior femora, and a narrow brownish margin at apex of middle and posterior femora. The tibiæ on the anterior aspect and outer aspect mostly yellow, brown posteriorily and at apex. Tarsi entirely brown.

Type locality.—New Haven, Conn.

One female taken May 15, 1903, by B. H. Waldon.

Anoplius humilis Cress.

Previously known only in the ♀ sex. The ♂ differs from the ♀ in the usual way and in having nearly all of the basal half of the posterior aspect of the posterior tibiæ and the dorsal apical abdominal segments whitish.

One ♂, New Haven, June 9, 1905 (B. H. Waldon).

Notes on some Tortricid genera.

By August Busck.

In his Handbook British Lepidoptera (1895) Meyrick includes Clemens' genus *Exartema* in the European fauna on the mistaken supposition that it is equivalent to Lederer's idea of *Eccopsis* Zeller, and continental authors (Rebel & Baron de Crombrugghe de Picquendaele) have adopted this synonomy.

Meyrick defines Clemens' genus correctly, though not exhaustively, but the single European species included, *latifasciana* Haworth, does not answer to this description, having veins 3 and 4 in the hind wings distinctly separate, not connate or short-stalked as in the type and in the other American species of the genus. Moreover, the hind wings in *latifasciana* are narrower than the forewings instead of broader, as in Clemens' genus, and the form of the hind wings is quite different, termen being very oblique and nearly straight, while in the American forms it is less oblique, sinuate below apex and bulging out at veins 3, 4 and 5; and the dorsal edge is evenly rounded in *latifasciana,* not sharply incised at vein as is characteristic of the genus *Exartema.*

There is, however, another European species, which is in every respect identical in structure with *Exartema,* namely *Hartigiana* Ratzeburg, and Lederer's genus *Cymolomia* precedes and must therefore supplant Clemens' genus.

No existing generic name seems applicable to the genus with *latifasciana* as type and it may be known as *Loxoterma,* which name thus stands for *Eccopsis* Lederer (non Zeller), and *Exartema* Meyrick (non Clemens).

A new species of Eulophidae.

By A. Arsene Girault.

Eulophus guttiventris sp. nov.

Male.—Length, 1.45-1.58 mm.; 1.54 mm., average.—Body brilliant metallic green, with the following exceptions; legs pale straw-yellow, excepting portions, or most of all of the coxæ, and the dusky apical tarsal joints; antennæ uniformly dusky, excepting the fulvous pedicel,

and the metallic-blue scape; mandibles fuscous; venation concolorous with the legs; ventral surface of the petiole pale; wings clear, irridescent; eyes garnet-red; a large portion of the ventum of the basal half of abdomen, pale, forming a whitish area; face metallic-blue; tibiæ of the posterior legs more dusky. Head rounded, at least three times wider than long (dorsal aspect), the whole of the face concaved and marginate, shagreened with sparse whitish hairs; eyes large, subreniform, with minute hairs. Head wider than thorax. Thorax longer than head and abdomen combined, shagreened, pilose; mesothorax with a deep femoral furrow; on each side, just caudad of the insertion of the posterior wings, a conspicuous tuft of stiff hairs. Portions of the pleuræ and the metathorax glabrous. Abdomen ovate, broadest at caudal fourth, pilose, the color somewhat variable in intensity. Segment two longest, twice longer than 3; 3 and 4 equal; 5, 6 and 7 equal, one-third smaller than 3; the remaining segments abruptly narrowed, the anal segment acute. Submarginal vein slightly longer than the marginal; postmarginal vein more than one-half as long as the marginal; stigmal vein distinct. Wings normal. Antennæ 9-jointed, hispid, 3-branched, a branch arising from the side of the base of each of the three proximal funicle joints, the proximal branch the longest; ring-joints absent; ramifications of the antennæ more hispid. Scape nearly club-shaped, thickest at its middle, nearly as long as the next three joints combined; pedicel globate, about one-half the length, or more, of the first funicle joint. Joint 1 of funicle cylindrical, about one-third the length of the scape and slightly over half the length of the following joint, its ramification more slender, and at least six times its own length; joint 2, the same, nearly twice the length of joint 1, intermediate in length between 1 and 3, its ramification slenderer than itself, and at least three times longer; funicle joint 3 twice the length of joint 1, slenderer, its ramification about equal to it in width, and at least twice its own length. Funicle joints 4 and 5 slender, equal in width to the ramification of the second funicle joint, about equal in length, both slightly shorter than the scape, and one-third longer than joint 3. Club abruptly thicker, about equal in length to joint 3 of the funicle, composed of two closely united and unequal joints.

From three specimens.

Female.—Length, 2.2 mm., average.—The same; larger. Color of the ventum of the abdomen more uniform, the large whitish spot more or less indistinct; the thorax and scutellum more strongly shagreened, in fact punctate, the reticulations forming pentagons. Abdomen ovate, wider, broadest at the middle, or at the third segment; second abdominal segment much the longest. Scape of antennæ pale, the remaining joints dusky. Antennæ 9-jointed, including a single ring-joint, cylindrical, pilose. Scape long and cylindrical, longer than the first funicle

joint, but much shorter than the pedicel, ring-joint and first funicle joints combined; pedicel cuneate, about the shortest joint, about one-third the length of the first funicle joint; joint 1 of funicle the longest joint of the flagellum, nearly as long as the scape, and twice the length of joint 3 of funicle; funicle joint 2 over one-half the length of joint 1 of funicle, and one-half longer than the following joint; funicle joint 3 shorter, oval, slightly longer than the two distal joints of the antennæ; club 3-jointed, not very distinct from the funicle, its basal joint widely separated and truncate cephalad and with somewhat pointed lateral angles; its two distal joints closely united, unequal in size; joint 1 of club slightly shorter than joint 3 of funicle, joint 2 of club slightly shorter than joint 1 of club, ovate; the final joint small, about equal to the pedicel.

From two specimens.

Described from three males and two females reared from the larvæ of *Tischeria malifoliella* Clemens, Washington, D. C., June 14-20, August 5 and 22 (Quaintance), and October 30, 1905, and Newark, Delaware, August 22, 1905 (C. P. Close), on apple foliage, in connection with the Deciduous-fruit Insect Investigations, Bureau of Entomology, U. S. Department of Agriculture.

Type:—No. 9640, United States National Museum, 1 ♂, 2 ♀.

This species was pronounced new by Dr. William H. Ashmead, United States National Museum, Washington, D. C., to whom the writer acknowledges his indebtedness.

THE editor of the NEWS went to southeastern Idaho, in the sage brush desert, during July, with the intention of doing some collecting there and in the Yellowstone Park, but had the misfortune to be taken sick in the sage brush desert, the heat in the west being unusually great during the past summer. Whether the illness was due to the local conditions or to the physical condition of the individual he does not care to discuss, but he can't help thinking of the following:

Going west on the Union Pacific, through the southern portion of Wyoming, the view is one of continuous sand and sage brush, a veritable desert. It is told that Mark Twain was going through, one time, and in the dining car his eye spied "Sage chicken" on the bill of fare. He called the waiter and asked what that was.

"It's chicken, sah, raised right through here, sah."

"Can they fly?" asked the humorist.

"Yes, sah, they can fly, sah."

"Well, then, I don't want any. Anything that can fly and stays in this country long enough to be killed can't be much good. None for me."

ENTOMOLOGICAL NEWS.

[The Conductors of ENTOMOLOGICAL NEWS solicit and will thankfully receive items of news likely to interest its readers from any source. The author's name will be given in each case, for the information of cataloguers and bibliographers.]

To Contributors.—All contributions will be considered and passed upon at our earliest convenience, and, as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer, for each number, three weeks before date of issue. This should be remembered in sending special or important matter for a certain issue. Twenty-five "extras," without change in form, will be given free, when they are wanted; and this should be so stated on the MS., along with the number desired. The receipt of all papers will be acknowledged.—ED.

PHILADELPHIA, PA., OCTOBER, 1906.

The editorial department of the NEWS has its trials and tribulations as well as its joys, and it may do some good to tell our readers of both. We are in danger of ruining our bank balance trying to accommodate the people who wish to *get in the next number,* and in endeavoring to please them this issue contains forty pages. Much of the manuscript we receive is typewritten, but some received is a disgrace to the authors, necessitating the looking up of scientific names in the literature, which can only be guessed at from the writing. We don't know all the names of insects and plants, and don't wish to, but some authors appear to overestimate our knowledge. Then, some names are proposed for the first time. Of course, the author knows what they are, but others can only guess. One of our joys is the fact that we get many letters in praise of the NEWS, and if it did not please, it could not have the phenomenal and steady growth which is continuously maintained. We regret to say that some subscribers fail to appreciate it a dollar's worth, and we have decided in future to make prepayment compulsory.

MR. G. W. KIRKALDY, in the September, 1906, number of THE ENTOMOLOGIST, gives a list of papers of special interest to the British entomologists (1905-06); he says, "There are many papers published in America of great value to British workers, although dealing exclusively with American forms." Of fourteen titles, five were published in ENTOMOLOGICAL NEWS.

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

DR. JOHN B. SMITH is spending the summer in Europe. We hope he may return greatly benefited.

E. C. COTTON has been appointed Assistant Entomologist at the Tennessee Agricultural Experiment Station.

DR. PHILIP P. CALVERT has been in the western United States and Mexico, and will attend the International Geological Congress in the City of Mexico.

OTHO C. POLING and Karl Mueschen of Quincy, Ill., have been on a collecting trip in the southwest. We learn from a newspaper account that they did some work near Silver City and Deming in New Mexico, and at the latter place took a specimen of *Sphinx elsa*. We will be glad to hear more in regard to what they did.

PROF. F. H. SNOW, of the University of Kansas, has returned from a collecting trip to the Baboquivari Mountains in southern Arizona. He brought back a large collection of insects, including *Amblychila baroni*. Prof. Snow has made many trips to the southwest on collecting expeditions and has turned up many new and rare species in the past twenty-five years.

"IT IS probable that we are aware of more imperfections in the system than Dr. Skinner is, owing to his lack of critical study of genera." (Dr. Dyar on his classification of the Hesperidæ.)

The gods forbid that Dr. Dyar publish any more of the imperfections he knows, as the thing is wretched enough as it stands.—HENRY SKINNER.

EXPLANATION of Terms Used in Entomology. This very important work, published by the Brooklyn Entomological Society, and prepared by Dr. J. B. Smith, is now on sale. It is a publication that was badly needed and the author and the Brooklyn Society are to be complimented on its completion. We do not see how any working entomologist can possibly get along without a copy.

ENTOMOLOGICAL NEWS has never been published during July and August, and it is so stated on the second cover page. This is a time of year when nearly everyone is devoting some time to collecting, and most persons take their vacation, so the journal is not as much needed during the two months mentioned. Moreover, the editors require a rest from their laborious duties and prefer to take it during the hottest summer weather.—EDS.

THE September issue of the NEWS contains an article by Mr. T. D. A. Cockerell on preoccupied generic names of Coleoptera. No. 8 of this article reads: "*Polystoma* Steph., 1835 (not Led., 1800); *Emplenota* Casey, 1884, is available."

I have no means to verify whether Lederstroem's (I believe) *Polystoma* in Vermes is still a valid generic name; if so, *Polystoma* Steph. must fall, and Casey's *Emplenota* takes its place. *Polystoma* Steph., however, has been lately universally assigned only a subgeneric rank of *Aleochara*. On page 244 of the same article the parallel between *Coenonycha* Horn, 1876, not *Coenonica* Kraats, 1857, is not a good illustration of the subject in discussion, as *Coenonycha* is derived from the Greek roinos (common) and onyx (nail), whereas *Coenonica* is composed of the words roinos and oikos (*house*).—A. FENYES.

TACHYRIS ILAIRE IN WEST VIRGINIA.—On June 12, 1906, while walking through a grassy orchard at French Creek, West Virginia, a large white butterfly of unfamiliar appearance flew leisurely toward me and alighted upon a red clover blossom. Calling to my little son, who was chasing fritillaries near by, I took his net and caught the stranger. An examination of the butterfly showed it to be a very well preserved male of *Tachyris ilaire*. The specimen is marked like those from Florida described by Dr. Henry Skinner in ENT. NEWS, May 10, 1894, and for which he proposed the varietal name *neumoegenii*. The wings above are white, without the dark tips seen in the examples from Central America. Beneath, the primaries show at the base distinct markings of orange, and the secondaries are pale lemon-yellow.

This butterfly was taken within fifty yards of the spot where on October 15th, 1905, I caught a *Vannessa j-album* as it fluttered about beneath the clap-board roof of an old wagon-shed. So far as my knowledge extends, these are the only specimens of the two species that have been collected in West Virginia, and they probably represent two of the most extreme southern and northern forms which visit this locality.—FRED E. BROOKS.

PROF. H. A. SURFACE, Economic Zoologist of Pennsylvania, states that his present scientific assistants are A. F. Satterthwaith, Clerk; N. G. Miller, Assistant, with the degree of Master of Sciences from the Pennsylvania State College,; L. R. White, Bachelor of Sciences, Pennsylvania State College; T. C. LeFevre, Bachelor of Science, Pennsylvania State College; D. K. McMillan, Bachelor of Science, Dickinson College; Chas. F. Noll, Bachelor of Science in Agriculture, Pennsylvania State College; W. H. Wolff, Bachelor of Science in Agriculture, Pennsylvania State College; P. H. Hertzog, Bachelor of Pedagogy; F. Z. Hartzell, Bachelor of Science in Biology, Lafayette College, and W. R. McConnell, Bachelor of Sciences in Biology, Pennsylvania State College. Some of these men are in the field as inspectors and others

are assisting in the office. There are other assistants besides those who are college graduates, but who are doing most excellent work in a line that is greatly needed in this State at the present time. The entomologists to the Board of Agriculture of the State are Franklin Menges, York County, and D. J. Waller, Indiana County.

TAUGHT BY AN INSECT.—Brunel, the famous engineer, was indebted to an insect for a great and useful invention. He was in a shipyard one day watching the movements of an insect known in English as the naval woodworm, when a brilliant thought suddenly occurred to him. He saw that this creature bored its way into a large piece of wood upon which it was operating by means of a very extraordinary mechanical apparatus.

Looking at the animal attentively through a microscope, he found that it was covered in front with a pair of valvular shells; that with its foot as a purchase it communicated rotary motion and a forward impulse to the valves, which, acting upon the wood like a gimlet, penetrated its substance, and that as the particles of wood loosened they passed through a fissure in the feet and thence through the body of the borer to its mouth, where they were soon expelled.

"Here," said Brunel to himself, "is the sort of thing I want. Can I reproduce it in an artificial form?" He forthwith set to work, and the final result of his labors, after many failures, was the famous boring shield with which the Thames tunnel was excavated.—*Newspaper.*

Doings of Societies.

The postponed meeting of the Feldman Collecting Social of June 20, 1906, was held on the evening of June 27, 1906, at the residence of Mr. H. W. Wenzel, 1523 S. 13th Street, Philadelphia. The meeting was called to order at 9.10 P. M., President Daecke presiding. Eight members were present.

Mr. Harbeck called attention to an omission in the communication of Mr. Daecke of last meeting, regarding the raising of *Balininus* larvæ. From ten chestnuts twenty-five larvæ had emerged, which were found this spring, dead and dried up in the hatching jars.

Mr. Seiss spoke of some egg masses of *Tenodera sinensis* he had received from Mr. Laurent, October 5. He had first observed the young on May 18, 1906, when batch one was hatched, batch two was found May 20, while three was observed May 24. He stated that when first hatched, they were

of a pale cream color, but changed to a light brown after a few hours exposure in the sun. Later they entirely disappeared from view.

Mr. Schmitz, who had also received egg masses of the same species from Mr. Laurent on the same date, reported having first noticed the young on June 9, 1906, stating they ranged from about 5/8 inch to 1¼ inches in length, the smaller ones being of a light chocolate hue, while the largest were a pale green, they seemed to be thriving, as they were observed at different times catching their food; from 15 to 20 specimens were seen scattered about.

Dr. Castle spoke of his trip with Mr. Daecke, May 27, 1906, to Forked River Mountains, N. J. They camped on the summit the first night; he stated that the hill is composed of sandstone, covered with gravel and large pebbles. The vegetation consists of pine, oak and the average vegetation usually found in pine barrens.

Mr. Harbeck stated that Dr. M. Swenk, of Nebraska University, had determined a lot of *Colletes* for him, and said that among them was a new species taken at Clementon, N. J.

Mr. Daecke mentioned some of the material collected on his trip with Dr. Castle on May 27, 1906, among which *Chrysops excitans* appeared, this species being new to the State; the same species was taken by Mr. H. W. Wenzel one week later at the same place. Continuing, the speaker said he had received *Chryops sordidus* from Mr. Weidt, collected in the Orange Mountains last May, this species also being new to the State. Mr. Daecke further reported *Tephritis platyptera* from Merchantville, N. J., May 26, 1906, and Castle Rock, Pa., June 3, 1906.

Mr. H. W. Wenzel spoke of his recent trip to North Mountain, Pa., June 16, 1906, which is situated in the Allegheny Mountains. The speaker said where formerly the spruce was found, the lumbermen have completely denuded the mountains, not one spruce being left to tell the tale of the destruction of this virgin forest. The speaker exhibited some (about eighty) species of *Coleoptera* taken on this trip, a number of the species belonging to the Canadian fauna.

EXCHANGES.

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Wanted.—Micro-lepidiptera, especially *Tineina* of North America. Will give named material in return; also Microlepidoptera and Coleoptera. Will buy desirable material.—Dr. W. G. Dietz, Hazleton, Pa.

Wanted eggs of *Anosia archippus*, living preferred, for the purpose of making photographs for J. W. Tutt's British Butterflies.—A. E. Tonge, Reigate, Surrey, England.

Wanted.—*Cicindela trilunaris, C. campestris*, and *Omus*, matured insects. Also pupae, larvae and eggs of North America *Cicindela*.—F. H. Goodfellow, Room 611, 42 Broadway, New York City.

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Wanted.—A number of Experiment Station Records to complete my file. Have considerable number of duplicates to offer in exchange. Send for list.—Wilmon Newell, Baton Rouge, La.

Before the season opens, I wish to arrange with parties in the southern United States and Mexico for the collecting of Buprestidae and *Phanæus*. Good exchange given.—E. A. Klages, Crafton, Pa.

Lycæna exilis wanted in exchange for foreign Lepidoptera, or for cash. Will take a large number.—Denton Bros., Wellesley, Mass.

Wanted.—For cash or exchange in any Order, specimens (living prefered) of any species of *Ceuthophilus*, also of any species of *Dermestes* (living prefered) —Frank E. Lutz, Cold Spring Harbor, L. I., N. Y.

Wanted.—Geometridæ from all parts of the United States. Will accept unidentified material. Will exchange or give cash for desirable specimens. Write first.—Wm. H. Broadwell, 209 Plane Street, Newark, New Jersey.

Specimens of the genus *Arctia* (*Apantesis* Walk.) desired from all parts of North America, also fertile eggs on larva. Good exchange given.—E. Denny, 200 Mitcheson, Montreal, Canada.

Wanted.—Neuropteroid insects, especially Perlidæ and Trichoptera; will name or exchange.—Nathan Banks, East Falls Church, Va.

Donaciæ of North America.—World's Cicindelidæ wanted in exchange for Coleoptera or Lepidoptera; will collect in others Orders the coming season. LeConte and Horn's Classification of Coleoptera wanted. Revision of Deltoids for sale.—C. A. Frost, 40 Grant St., South Framingham, Mass.

Chlænius.—Specimens of this genus wanted in numbers for a foreign correspondent. Beetles or other Orders in exchange. C. T. Brues, Public Museum, Milwaukee, Wisconsin.

Will contract to collect any Order or Group of insects this season for private collections, museums, colleges or any public institutions. Duplicates for sale of all Orders from Colorado, New Mexico and Arizona.—Ernest J. Oslar, Alcott P. O., Denver, Colorado.

I solicit correspondence with those interested in the life histories of of North American Catocalæ.—R. R. Rowley, Louisiana, Mo.

Wanted for cash.—Perfect imagos in papers or pinned of *Tabanus atratus, Corydalus cornuta, Myrmeleon fornicarius* and large specimens of Caddice Fly. Send list and price to John H. Matthews, 3219 N. 13th St., Philadelphia, Pa.

Coleoptera.—*Dynastes tityus* and other desirable species in exchange for Coleoptera new to my collection.—H. P. Loding, 911 Palmetto St., Mobile, Ala.

Exchange or cash.—Offered for ova of *Hemileuca nevadensis* and pupæ of *chersis, modesta, drupiferarum* and other sphinges and large moths.—J. L. Mitchell, 212 Indiana Trust Building, Indianapolis, Ind.

Wanted.—Inflated larvæ, dead pupæ and imagines of our common and larger butterflies and moths, also insects injurious and beneficial to agriculture, horticulture, etc. Larger and common insects of all orders. For cash or in exchange for rare domestic or exotic insects.—The Kny-Scheerer Co , Deptartment of Natural Science, 225-233 Fourth Avenue, New York.

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